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L1: Entry 23 of 29 File: JPAB Sep 22, 1998

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TITLE: MANUFACTURE OF SOFT CAPSULE FOR HEALTH AUXILIARY FOOD

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APPL-NO: JP09051431
APPL-DATE: March 6, 1997

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ABSTRACT:

PROBLEM TO BE SOLVED: To protect a nutrient from decomposition by light and from degeneration by oxidation, by mixing and sealing extracted carotenoid originated from algae in the nutrient unstable against the light and the oxidation.

SOLUTION: By mixing and sealing 0.5-2wt.% extracted carotenoid originated from Dunaliella which is a unicellular chlorophyta to a material to be sealed in a soft capsule, the unstable nutrient is protected and maintained inside the soft capsule in a stable state.

First Hit

L1: Entry 27 of 29 File: DWPI Sep 22, 1998

DERWENT-ACC-NO: 1998-560689
DERWENT-WEEK: 200025

TITLE: Preparation of soft capsule for health auxiliary foods - comprises blending carotenoid(s) extracted from algae with nutrients unstable to light and oxidation

PATENT-ASSIGNEE:

ASSIGNEE	CODE
MICRO ALGE CORP KK	MICRN

PRIORITY-DATA: 1997JP-0051431 (March 6, 1997)

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ABSTRACTED-PUB-NO: JP 10248526A
BASIC-ABSTRACT:

Preparation of a soft capsule for health auxiliary foods comprises blending carotenoids extracted from algae with nutrients unstable to light and oxidation.

Preferably the algae is unicellular green algae, Dunaliella. The blend ratio of the carotenoids is 0.5-2 wt. % of the amount of the material to be capsulated. The algae contains beta -carotene and hydrophilic carotenoids having hydroxyl groups and the carotenoids penetrate into the capsule film from the inside to colour the capsule. The soft capsule is prepared by preparing a conventional solution for formation of the soft capsule film and capsulating the solution and a solution of a material to be capsulated and blended with the extracted carotenoids in a rotary or dropping soft capsule production apparatus.

ADVANTAGE - The process protects unstable nutrients from light and oxidation and improves storage stability of soft capsules.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: PREPARATION SOFT CAPSULE HEALTH AUXILIARY FOOD COMPRISE BLEND CAROTENOID EXTRACT ALGAE NUTRIENT UNSTABLE LIGHT OXIDATION

DERWENT-CLASS: D13 D16

CPI-CODES: D03-H01T;

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(72)Inventor : **TAKENAKA HIROYUKI**
SHIRAISHI TERUO

(54) **MANUFACTURE OF SOFT CAPSULE FOR HEALTH AUXILIARY FOOD**

(57)Abstract:

PROBLEM TO BE SOLVED: To protect a nutrient from decomposition by light and from degeneration by oxidation, by mixing and sealing extracted carotenoid originated from algae in the nutrient unstable against the light and the oxidation.

SOLUTION: By mixing and sealing 0.5-2wt.% extracted carotenoid originated from Dunaliella which is a unicellular chlorophyta to a material to be sealed in a soft capsule, the unstable nutrient is protected and maintained inside the soft capsule in a stable state.

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* NOTICES *

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The process of the soft capsule for health supplements which faces preparing the soft capsule for health supplements by enclosing an unstable nutrient to light or oxidation, and is characterized by blending the extract carotinoid of the algae origin with the above-mentioned nutrient.
[Claim 2] DEYUNARIERA whose extract carotinoid is unicellular green algae (Dunaliella) Claim characterized by being the extract carotinoid of the origin 1 Process of the soft capsule for health supplements of a publication.
[Claim 3] the matter with which the loadings of an extract carotinoid should be enclosed with a soft capsule -- receiving -- 0.5-2 Claim characterized by being weight % 1 or -- 2 Process of the soft capsule for health supplements of a publication.

[Translation done.]

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3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the process of the soft capsule for health supplements, and relates to the approach of protecting an unstable nutrient to light or oxidation especially, and maintaining to a stable state in a soft capsule.
[0002]
[Description of the Prior Art] It is a vitamin when it is the matter which adding a caramel and a water-soluble food color to the basis for capsule coat formation containing gelatin and a plasticizer, and bringing about protection-from-light nature when enclosing the matter which is easy to disassemble by light in a soft capsule is known, and is easy to oxidize. Enclosing in a soft capsule, after blending anti-oxidants, such as E, is known.
[0003]
[The technical problem which invention tends to solve thru/or the object of invention] Although it cannot be called that by which using a caramel for preparation of the protection-from-light nature soft capsule for health supplements matched the healthy intention since a caramel was sugar but the water-soluble food color is mainly used, these coloring matter is the food additives by which chemosynthesis was generally carried out, and this does not match a healthy intention, either. Moreover, since ** which is a caramel as a coloring agent as it is such coloring matter for water-soluble synthetic diet is not asked but it supplies to the basis mixing tank for capsule coat formation, when it is going to manufacture another transparence soft capsule for health supplements which enclosed the stable matter, washing of the above-mentioned mixing tank and a related line is needed, the activity takes time amount, therefore it is disadvantageous also in cost. In addition, a caramel and the coloring matter for water-soluble synthetic diet are matter which is easy to oxidize since it does not have the function to protect the matter which should be enclosed from oxidation. (nutrient) When it is going to enclose, an anti-oxidant must be added to the matter concerned.
[0004] Therefore, the object of this invention is blended with the matter which should enclose the extract of the natural product origin. The need of blending coloring matter and a coloring agent with a capsule coat formation basis for the purpose of protection from light by this is abandoned. With, nothing [which can judge the description of a capsule coat certainly from a rule of thumb or the stored data / the thing and nothing], Furthermore, also when enclosing the unstable matter to oxidation, the matter concerned can be protected, therefore addition of an anti-oxidant can be omitted, and it is in offering the process of the soft capsule for health supplements with which ** also matches a healthy intention.
[0005]
[The means for solving a technical problem and attaining the object] According to this invention, while the process of the soft capsule for health supplements which faces the above-mentioned technical problem preparing the soft capsule for health supplements by enclosing an unstable nutrient to light or oxidation, and is characterized by blending the extract carotinoid of the algae origin with the above-mentioned nutrient is solved, the above-mentioned object is attained.
[0006]
[Embodiment of the Invention] As an extract carotinoid of the algae origin used in this invention approach, it is DEYUNARIERA which is unicellular green algae. (Dunaliella) It is desirable that it is the carotinoid from which the origin was extracted.
[0007] As opposed to the matter with which the loadings of an extract carotinoid should be enclosed with a soft capsule 0.5-2 Weight % is desirable. 0.5 [because,] it is under weight % -- the protection-from-light nature effectiveness and oxidation depressor effect -- not enough -- on the other hand -- 2 even if it blends more than weight % , the improvement in effectiveness is accepted -- not having -- 0.5-2 within the limits of weight % -- a dosage -- it is because anaclitic effectiveness was accepted.
[0008] the carotinoid in which algae contain why the extract carotinoid of the algae origin is used in this invention approach -- mainly -- beta carotene (it has the operation which changes to vitamin A at provitamin A, i.e., in the living body) it is -- although -- Various carotinoids which have a hydroxyl group (hydrophilic carotinoid) It contains. It is the thing from which these hydrophilic carotinoids permeate [inside / of a soft capsule coat] in a coat, and they make a capsule produce coloring. It is because it is because such a phenomenon is not accepted when using synthetic beta carotene, and it is a natural carotinoid further, so the healthy intention is also matched. In addition, the reason the extract carotinoid of the DEYUNARIERA group origin was chosen in this invention is that the algae of a DEYUNARIERA group contain the hydrophilic carotinoid in abundance.
[0009] The essence of this invention approach is to blend the extract carotinoid of the algae origin with the matter which should be enclosed like previous statement. The soft-capsule-izing itself in addition, by the approach of common use The solution for soft capsule coat formation is prepared with a conventional method using the basis for soft capsule coat formation. Namely, this solution, It can carry out by using general-purpose rotary system or a dropping type soft capsule manufacturing installation, using the solution which blended the extract carotinoid of the algae origin with the matter which should be enclosed.
[0010]
[Example] etc. Next, an example, a comparison example, and the example of a trial explain this invention still in detail and concretely. Solution for example soft capsule coat formation (glycerol : gelatin : water = 45:22.5:32.5 weight section) It prepares with a conventional method. Seaweed tannin very unstable to light and oxidation on the other hand (FURORO tannin of the wakame seaweed origin) To a perilla oil 1 Weight % ** Carry out ** and it mixes. Furthermore, DEYUNARIERA SARINA (Dunaliella salina) Extract carotinoid of the

origin 1 The solution which should be enclosed in a capsule was prepared by carrying out weight % addition and mixing. The soft capsule was manufactured with the conventional method by the rotary system soft capsule manufacturing installation, using these solutions.
[0011] Comparison example It is a caramel to the solution for soft capsule coat formation given in one example. 1 Weight % addition and mixing of are done, and it considers as the used solution for soft capsule coat formation, and, on the other hand, is to perilla oil about seaweed tannin. 1 The solution which should be enclosed in a capsule was prepared by carrying out weight % addition and mixing. The soft capsule was manufactured with the conventional method by the rotary system soft capsule manufacturing installation, using these solutions.
[0012] Comparison example The solution for soft capsule coat formation is prepared with a conventional method like two examples, and, on the other hand, it is to perilla oil about seaweed tannin. 1 Vitamin which weight % addition is carried out, and it mixes, and is an anti-oxidant further E 0.5 The solution which should be enclosed in a capsule was prepared by carrying out weight % addition and mixing. The soft capsule was manufactured with the conventional method by the rotary system soft capsule manufacturing installation, using these solutions.
[0013] Comparison example Three comparison examples 1 The solution for caramel content soft capsule coat formation is prepared similarly, and, on the other hand, it is to perilla oil about seaweed tannin. 1 Weight % addition is carried out, and it mixes, and is a vitamin further. E 0.5 % of the weight The solution which should be enclosed in a capsule was prepared by adding and mixing. The soft capsule was manufactured with the conventional method by the rotary system soft capsule manufacturing installation, using these solutions.
[0014] the example example list of a trial -- comparison example 1-3 the manufactured health supplement soft capsule -- a room temperature -- setting -- and -- 12 Time amount lighting condition (under a fluorescent lamp) -12 It saves in the cycle of a time amount putting-out-lights condition. The result of having extracted these parts with time, having measured the content of the seaweed tannin in a soft capsule, and having investigated that stability is the following table (this table). 1 It was as being shown. Content of the seaweed tannin at the time of capsule manufacture 100 It carries out and the % value shows the survival rate after the passage of time.
[0015]
[A table 1]

軟カプセル	保存期間			
	1ヶ月	3ヶ月	6ヶ月	12ヶ月
実施例	100%	100%	100%	100%
比較実施例				
1	100%	98%	88%	65%
2	100%	92%	75%	32%
3	100%	100%	100%	100%

[0016] It is a comparison example so that clearly from the above-mentioned table. 1 Soft capsule to twist (the caramel as a protection-from-light agent is contained in the capsule coat section) It sets. In order that seaweed tannin may tend to oxidize, the ullage of seaweed tannin decreases with time. Comparison example 2 Soft capsule to twist (vitamin E as an anti-oxidant is contained in the contents of a capsule) Although the ullage of seaweed tannin decreases with time since it sets and seaweed tannin tends to be decomposed by light Comparison example (as a protection-from-light agent in the capsule coat section) 3 Soft capsule to twist A ** caramel is contained and it is a vitamin as an anti-oxidant to the contents of a capsule. E Soft capsule by content and the example (the extract carotinoid of the algae origin is contained in the contents of a capsule) It sets. From ****** 12 KE Change was not accepted in the content of seaweed tannin after the menstruation fault. This shows the very effective thing, when the extract carotinoid of the algae origin protects the unstable matter to light or oxidation.
[0017]
[Effect of the Invention] In case the soft capsule for health supplements which enclosed the nutrient is prepared, the nutrient concerned can be protected from deterioration by decomposition by light, or oxidation by blending the extract carotinoid of the algae origin with a nutrient, therefore the shelf life of a soft capsule becomes good, and since a compound is a natural carotinoid, it also matches a healthy intention.

[Translation done.]

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(54)【発明の名称】　健康補助食品用軟カプセルの製法

(57)【要約】
【課題】　光や酸化に対して不安定な栄養素を安定に保護する、健康補助食品用軟カプセルの製法を提供する。
【解決手段】　藻類由来の抽出カロチノイドを栄養素に配合し、これを内容物として健康補助食品用軟カプセルを調製する。
【効果】　使用されるカロチノイドは天然物であり、遮光のための合成着色料や酸化防止のための合成抗酸化剤を用いないために健康志向の点において優れた健康補助食品用軟カプセルが得られる。

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【特許請求の範囲】

【請求項1】　光や酸化に対して不安定な栄養素を封入することにより健康補助食品用軟カプセルを調製するに際して、上記の栄養素に藻類由来の抽出カロチノイドを配合することを特徴とする、健康補助食品用軟カプセルの製法。

【請求項2】　抽出カロチノイドが単細胞緑藻であるデュナリエラ(Dunaliella) 由来の抽出カロチノイドであることを特徴とする、請求項 1 に記載の健康補助食品用軟カプセルの製法。

【請求項3】　抽出カロチノイドの配合量が軟カプセルに封入されるべき物質に対して 0.5 - 2 重量% であることを特徴とする、請求項 1 又は 2 に記載の健康補助食品用軟カプセルの製法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は健康補助食品用軟カプセルの製法に係り、殊に光や酸化に対して不安定な栄養素を保護して軟カプセル内に安定状態に維持する方法に係る。

【0002】

【従来の技術】光により分解し易い物質を軟カプセル内に封入する場合に、ゼラチンと可塑剤とを含有するカプセル被膜形成用基剤にカラメルや水溶性食用色素を添加して遮光性をもたらすことが知られており、又酸化され易い物質の場合にはビタミン E等の抗酸化剤を配合した上で軟カプセル内に封入することが知られている。

【0003】

【発明が解決しようとする課題乃至発明の目的】健康補助食品用の遮光性軟カプセルの調製にカラメルを用いることは、カラメルが糖質であるために健康志向にマッチしたものとは云えず、主として水溶性食用色素が用いられているが、これらの色素は一般に化学合成された食品添加物であり、これも健康志向にマッチしないものである。又、このような水溶性合成食用色素であると着色剤としてのカラメルであるとを問わず、カプセル被膜形成用基剤調合タンクに投入するのであるから、安定な物質を封入した別の健康補助食品用透明軟カプセルを製造しようとする場合には上記の調合タンク及び関連ラインの洗浄が必要となり、その作業に時間を要し、従ってコスト的にも不利である。尚、カラメルや水溶性合成食用色素は封入すべき物質を酸化から保護する機能を有していないので、酸化し易い物質（栄養素）を封入しようとする場合には、当該物質に抗酸化剤を添加しなければならない。

【0004】従って、本発明の目的は天然物由来の抽出物を封入すべき物質に配合し、これによって遮光目的でカプセル被膜形成基剤に色素や着色剤を配合する必要性を廃し、以てカプセル被膜の性状を経験則や蓄積されたデータから確実に判断し得るものとなし、更に酸化に対して不安定な物質を封入する場合にも当該物質を保護することができ、従って抗酸化剤の添加を省略でき、然も健康志向にもマッチする健康補助食品用軟カプセルの製法を提供することにある。

2

【0005】

【課題を解決し目的を達成するための手段】本発明によれば、上記の課題は、光や酸化に対して不安定な栄養素を封入することにより健康補助食品用軟カプセルを調製するに際して、上記の栄養素に藻類由来の抽出カロチノイドを配合することを特徴とする、健康補助食品用軟カプセルの製法により解決されると共に、上記の目的が達成される。

【0006】

【発明の実施の形態】本発明方法において使用される藻類由来の抽出カロチノイドとしては、単細胞緑藻であるデュナリエラ (Dunaliella) 由来の抽出されたカロチノイドであることが好ましい。

【0007】抽出カロチノイドの配合量は軟カプセルに封入されるべき物質に対して 0.5 -2 重量% が好ましい。何故ならば、0.5 重量% 未満であると遮光性効果や酸化抑制効果が充分ではなく、一方 2 重量% 以上配合しても効果の向上は認められず、0.5 - 2 重量% の範囲内で用量依存的な効果が認められたからである。

【0008】本発明方法において藻類由来の抽出カロチノイドが使用される理由は、藻類が含有しているカロチノイドは主としてβ-カロチン（プロビタミン A、即ち生体内でビタミン A に変化する作用を有している）であるが、水酸基を有する種々のカロチノイド（親水性カロチノイド）をも含有しており、これらの親水性カロチノイド類が軟カプセル被膜の内側から被膜内に浸透してカプセルに着色を生じさせるものであって、このような現象は合成β-カロチンを用いる場合には認められないからであり、更に天然カロチノイドであるために健康志向にもマッチしているからである。尚、本発明においてデュナリエラ属由来の抽出カロチノイドが選択された理由は、デュナリエラ属の藻類が親水性カロチノイドを豊富に含有しているからである。

【0009】尚、本発明方法の本質は、既述のように、封入すべき物質に藻類由来の抽出カロチノイドを配合することにあり、軟カプセル化自体は慣用の方法により、即ち軟カプセル被膜形成用基剤を用いて常法により軟カプセル被膜形成用溶液を調製し、該溶液と、封入すべき物質に藻類由来の抽出カロチノイドを配合した溶液とを用い且つ汎用のロータリー式又は滴下式軟カプセル製造装置を使用することにより実施することができる。

【0010】

【実施例等】次に実施例、比較実施例及び試験例により本発明を更に詳細に且つ具体的に説明する。

実施例

軟カプセル被膜形成用溶液（ゼラチン : グリセロール

：水＝45：22.5：32.5 重量部）を常法により調製し、一方、光にも酸化にも極めて不安定な海草タンニン（ワカメ由来のフロロタンニン）を紫蘇油に 1 重量% 添加して混合し、更にデュナリエラ・サリーナ（Dunaliella salina）由来の抽出カロチノイドを 1 重量% 添加して混合することによりカプセル内に封入すべき溶液を調製した。これらの溶液を用い且つロータリー式軟カプセル製造装置により常法により軟カプセルを製造した。

【００１１】比較実施例 1

実施例に記載の軟カプセル被膜形成用溶液にカラメルを 1 重量% 添加・混合して軟カプセル被膜形成用の使用液とし、一方、海草タンニンを紫蘇油に 1 重量% 添加して混合することによりカプセル内に封入すべき溶液を調製した。これらの溶液を用い且つロータリー式軟カプセル製造装置により常法により軟カプセルを製造した。

【００１２】比較実施例 2

実施例と同様に軟カプセル被膜形成用溶液を常法により調製し、一方、海草タンニンを紫蘇油に 1 重量% 添加して混合し、更に抗酸化剤であるビタミン E を0.5 重量% 添加して混合することによりカプセル内に封入すべき溶液を調製した。これらの溶液を用い且つロータリー＊

＊式軟カプセル製造装置により常法により軟カプセルを製造した。

【００１３】比較実施例 3

比較実施例 1 と同様にカラメル含有軟カプセル被膜形成用溶液を調製し、一方、海草タンニンを紫蘇油に 1 重量% 添加して混合し、更にビタミン E を 0.5重量% 添加して混合することによりカプセル内に封入すべき溶液を調製した。これらの溶液を用い且つロータリー式軟カプセル製造装置により常法により軟カプセルを製造した。

【００１４】試験例

実施例並びに比較実施例 1－3 により製造された健康補助食品軟カプセルを室温において且つ 12 時間照明状態（蛍光灯下）－12 時間消灯状態のサイクルで保存し、これらの一部を経時的に採取して軟カプセル内の海草タンニンの含有量を測定し、その安定性を調べた結果は下記の表 1 に示されている通りであった（この表は、カプセル製造時における海草タンニンの含有量を 100 とし、経時後の残存率を % 値で示している）。

【００１５】

【表1】

軟カプセル	保存期間			
	1ヶ月	3ヶ月	6ヶ月	12ヶ月
実施例	100%	100%	100%	100%
比較実施例				
1	100%	98%	88%	65%
2	100%	92%	75%	32%
3	100%	100%	100%	100%

【００１６】上記の表から明らかなように、比較実施例 1 による軟カプセル（カプセル被膜部に遮光剤としてのカラメルを含有）においては、海草タンニンが酸化され易いために海草タンニンの残存量が経時的に減少し、比較実施例 2 による軟カプセル（カプセルの内容物に抗酸化剤としてのビタミン E を含有）においては、海草タンニンが光により分解され易いために海草タンニンの残存量が経時的に減少するが、比較実施例 3 による軟カプセル（カプセル被膜部に遮光剤としてのカラメルを含有し且つカプセルの内容物に抗酸化剤としてのビタミン E を含有）及び実施例による軟カプセル（カプセルの内容物に藻類由来の抽出カロチノイドを含有）においては※製造から 12 ヶ月経過後においても海草タンニンの含有量に変化は認められなかった。このことは、藻類由来の抽出カロチノイドが光や酸化に対して不安定な物質を保護する上で極めて有効であることを示している。

【００１７】

【発明の効果】栄養素を封入した健康補助食品用軟カプセルを調製する際に、栄養素に藻類由来の抽出カロチノイドを配合することにより当該栄養素を光による分解や酸化による変質から保護することができ、従って軟カプセルの保存性が良好となり、又配合物は天然カロチノイドであるために健康志向にもマッチする。

フロントページの続き

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